A preliminary investigation into the utility of the Adult Behavior Checklist in the assessment of psychopathology in people with low IQ

Tenneij, N.H.; Koot, H.M.

published in
Journal of Applied Research in Intellectual Disabilities
2007

DOI (link to publisher)
10.1111/j.1468-3148.2007.00383.x

document version
Publisher's PDF, also known as Version of record

Journal of Applied Research in Intellectual Disabilities 2007, **20**, 391–400

A Preliminary Investigation into the Utility of the Adult Behavior Checklist in the Assessment of Psychopathology in People with Low IQ

Nienke H. Tenneij and Hans M. Koot

Department of Development Psychology, Vrije Universiteit Amsterdam, Amsterdam, The Netherlands

Accepted for publication *10 March 2007*

Background Achenbach & Rescorla (2003) recently developed the Adult Behavior Checklist (ABCL) to assess psychopathology in the general population. The ABCL should be completed by a proxy informant. The use of proxy informants, instead of self-reporting, makes the ABCL potentially suitable for the assessment of psychopathology in adults with intellectual disability. The aim of the present study was to examine reliability and validity of the ABCL in 124 adults with mild intellectual disability or low IQ, and severe challenging behaviour referred for residential treatment.

Methods The ABCL was completed by two independent informants to assess inter-rater reliability. To examine the validity of the ABCL, its relationship with three measures of functioning was assessed. Furthermore, association between scales of the ABCL and DSM-IV axis I disorders was examined.

Results The ABCL was reliable in terms of internal consistency of its scales, and inter-rater reliability. Relationships between clusters of axis I DSM-IV disorders and scales of the ABCL were found as expected. Moreover, ABCL scales predicted different measures of functioning.

Conclusions The ABCL appears to be a reliable and valid measure to assess psychopathology in persons with mild intellectual disabilities or low IQ, admitted for treatment in facilities for adults with mild intellectual disability and severe challenging behaviour.

Keywords: Adult Behavior Checklist, assessment, intellectual disability, psychopathology

Introduction

Many studies have shown that people with intellectual disabilities often suffer from psychiatric problems (Borthwick-Duffy 1994; Dykens 2000). In order to plan, and eventually evaluate, interventions for these problems in both outpatient and inpatient psychiatric services, valid instruments for assessment are needed. A number of instruments have been developed for the assessment of psychopathology in adults with intellectual disability, such as the Behavior Problems Inventory (Rojahn *et al.* 2001), Aberrant Behavior Checklist (Aman *et al.* 1985a,b), Psychopathology Inventory for Mentally Retarded Adults (Matson *et al.* 1984; Senatore *et al.* 1985), Reiss Screen for Maladaptive Behavior (Reiss 1988), and the Developmental Behavior Checklist for Adults (Mohr *et al.* 2005). In general, instruments developed specially for persons with intellectual disability are suitable for the whole range of intellectual disability, from profound to mild. Consequently, they include symptoms, criteria and/or behaviours that are not included in measures developed to assess psychopathology in the general population. However, the use of intellectual-disability specific criteria can be questioned for persons in the moderate to mild range of intellectual disability. It has been suggested that measurement of psychopathology in these groups should correspond to that in the general population (Borthwick-Duffy *et al.* 1997; Matson & Bamburg 1998). However, one problem with measures of psychopathology for the general population is that they

 10.1111/j.1468-3148.2007.00383.x

often depend on self-reporting. This type of administration may be less suitable for persons with mild intellectual disability. Although the possibility of biased responding exists whenever anyone undertakes a self-report questionnaire or interview, the likelihood of bias occurring is greater among persons with intellectual disability (Heal & Sigelman 1995). Consequently, the use of proxy respondents appears preferable for this population.

Recently, an instrument to assess psychopathology in the general population has been developed that can be completed by proxy respondents, the Adult Behavior Checklist (ABCL; Achenbach & Rescorla 2003). The ABCL is a revision of the Young Adult Behavior checklist (YABCL; Achenbach 1997), which was previously normed for ages 18–30 years. The ABCL is suitable for the 18- to 59-year age group and contains items and scales tapping a broad range of psychopathological outcomes. Both the YABCL and ABCL have been found reliable and valid measures to assess psychopathology in the general population (Achenbach 1997; Achenbach & Rescorla 2003). As far as we know, these instruments have never been used in adults with intellectual disabilities. However, an equivalent of this measure for children, the Child Behavior Checklist (CBCL; Achenbach 1991), has been used in children and adolescents with intellectual disability. Several studies (e.g. Linna *et al.* 1999; Dekker *et al.* 2002; Koskentausta *et al.* 2004) have demonstrated the usefulness of the CBCL in the assessment of psychopathology in children with mild intellectual disabilities. Because of the broad range of emotional and behavioural problems that can be assessed with ABCL, the ease of administration, and the positive findings with the age-equivalent CBCL in children with intellectual disabilities, we were interested in the utility of the ABCL in an adult population with mild intellectual disability. In this study we investigated the reliability and validity of the ABCL in a sample of adults with mild intellectual disability or low IQ and severe challenging behaviour who were referred to mental health services. We opted for this population because the expected prevalence of psychiatric disorders in this population would make it possible to examine the relationship between ABCL scales and related DSM-IV axis I disorders. Furthermore, in persons undergoing treatment for mental health problems, valid instruments for assessment and evaluation are especially important.

The first aim of this study was to assess the reliability of the ABCL. To this end, the internal consistency and inter-rater reliability of the ABCL filled in by primary-care staff were determined. Second, we aimed at assessing the validity of the ABCL. In the absence of a gold standard for the assessment of psychopathology in persons with intellectual disability we chose two approaches. We examined the concurrent validity of the ABCL scales by examining their relationship with clusters of DSM-IV disorders. We expected the syndrome scales of the ABCL to help discriminate between adults with and without corresponding DSM-IV clusters. For example, we expected clients with an anxiety or mood disorder to show higher scores on the corresponding Anxious/Depressed scale of the ABCL compared with clients without an anxiety or mood disorder. We also examined associations between ABCL scales and different measures of functioning. In non-intellectually disabled populations, as in intellectually disabled populations, it has been shown that the presence of psychopathology is negatively related to social functioning (e.g. Glynn 1998; Sanderson & Andrews 2002; Bielecki & Swender 2004; Duncan *et al.* 1999; Matson *et al.* 2000). For example, Matson *et al.* (2000) demonstrated in a population with mild and moderate intellectual disability that the degree of psychopathology was negatively related to impairments in social skills. So, if the ABCL is a valid measure of psychopathology in adults with mild intellectual disability, one would expect it to show associations with measures of functioning.

Method

Participants

The participants of the study were 124 adults (91 men and 33 women), who were treated as inpatients in five clinics across the Netherlands, specialized in the treatment of adults with mild intellectual disability and severe challenging behaviour. In the current sample the challenging behaviours were primarily aggressive behaviour, sexually inappropriate behaviour and oppositional behaviour. The mean age of participants was 26.1 years (SD = 7.6). Based on standardized test results obtained during the standard diagnostic procedure in the clinics including a variety of tests (22 tested at another institution; four cases missing) the mean IQ was 70.8 (SD = 11.2). The mean treatment duration at the time of assessment was 63.8 weeks (SD = 104.9), representing a range of 11–699 weeks. Hence, treatment duration at time of the assessment differed considerably.

Instruments

Adult Behavior Checklist

The ABCL consists of 118 behaviour problem items which were evaluated for the preceding 3 months. Behaviour problem statements are scored by someone who knows the person well, on a three-level rating scale ('not true', 'somewhat or sometimes true' and 'very true'). With factor-analytic methods, eight small-band syndrome scales were distinguished: Anxious/Depressed (14 items; e.g. cries, feels worthless, nervous/tense), Withdrawn (nine items; e.g. rather be alone, refuses to talk, trouble making friends), Somatic Complaints (nine items; e.g. tired without a good reason, trouble sleeping, somatic complaints without known medical cause), Thought Problems (12 items; e.g. hears sounds that aren't there, strange behaviour, strange ideas), Attention Problems (17 items; e.g. cannot concentrate, trouble planning, lacks initiative), Aggressive Behavior (16 items; e.g. mean to others, attacks people, threatens people), Rule-breaking Behavior (13 items; e.g. uses drugs, gets drunk, and trouble with the law) and Intrusive (six items; e.g. brags, demands attention, and showing off). Furthermore, two global broad-band syndromes, labelled 'Internalizing' and 'Externalizing', were identified by performing second-order factor analyses of the syndrome scales. The Internalizing scale is a summary score derived from the Withdrawn, Somatic Complaints and Anxious/Depressed scales. Similarly, the Externalizing Scale is derived from the Rule-breaking Behavior and Aggressive Behavior Scales. Finally, a Total Problem Score can be obtained, which consists of the sum of all problem item scores. The ABCL has been proven reliable in terms of test–retest correlations and internal consistency of scales (Achenbach & Rescorla 2003). A Dutch authorized version of the ABCL exists; however, Dutch norms are not yet available. In all analyses we used raw scores.

Assessment of DSM-IV axis I disorders and GAF

To standardize assessment of DSM-IV axis I psychopathology, an adjusted version of the DSM-III-R Checklist (Hudziak *et al*. 1993) was used. Presence or absence of criteria of DSM-IV axis I disorders had to be judged based on all available clinical information for each client by the chair of the diagnostic team, who was in any case a highly experienced professional, either a psychiatrist or a clinical psychologist. All raters received instructions on how to use the checklist. DSM-IV disorders included in the checklist were: all anxiety disorders; all mood disorders; all psychotic disorders; attention-hyperactivity disorder; autistic disorder; Asperger's disorder; pervasive developmental disorder not otherwise specified; conduct disorder; oppositional defiant disorder; somatization disorder; eating disorders; and adjustment disorders. If a client met criteria of an axis I disorder not included in the checklist, this diagnosis could be added. The original checklist generated diagnostic agreement, with psychiatric diagnoses of 95% (Hudziak *et al*. 1993). Of 10 clients the DSM-IV checklist was missing due to administrative failures, resulting in DSM-IV data of 114 clients (see Table 1).

Because individual diagnoses were of too low frequency to examine, for purposes of this study, we constructed four broad clusters of disorders: (1) any axis I disorder; (2) pervasive developmental disorder cluster (autistic disorder, Asperger's disorder; pervasive developmental disorder not otherwise specified (NOS)); (3) disruptive disorder cluster (conduct disorder, oppositional defiant disorder, attention-deficit hyperactivity disorder); and (4) mood–anxiety disorder cluster (major depressive disorder, dysthymic disorder, generalized anxiety disorder, post-traumatic stress disorder). So, for example, clients with a diagnosis of conduct disorder, oppositional defiant disorder and/or attention-deficit disorder, all fell in the broader category of disruptive disorder. The chair of the diagnostic team also rated the

Table 1 Prevalence of DSM-IV axis I disorders

	Total sample (N = 114) % (n)
Generalized anxiety disorder	4.4 (5)
Posttraumatic stress disorder	4.4 (5)
Major depressive disorder	6.1 (7)
Dysthymic disorder	5.3 (6)
Mood-anxiety cluster	18.4 (21)
Autistic sisorder	8.8 (10)
Asperger's disorder	0.9 (1)
Pervasive developmental disorder NOS	8.8 (10)
Pervasive developmental disorder cluster	18.4 (21)
Attention-deficit/hyperactivity disorder	6.1 (7)
Conduct disorder	7.1 (8)
Oppositional defiant disorder	12.3 (14)
Disruptive cluster	22.8 (26)
Schizophrenia	6.1 (7)
Schizophreniform disorder	.9 (1)
Schizoaffective disorder	.9 (1)
Adjustment disorder	2.6 (3)
Any disorder	57.9 (66)

Clients could meet criteria for more than one cluster.

present-state Global Assessment of Functioning, axis V of the DSM-IV (GAF; American Psychiatric Association 1994), based on all available clinical information. Instructions on how to use the GAF rating were supplied.

Social Functioning Scale for the Mentally Retarded

The Social Functioning Scale for the Mentally Retarded (SRZ-P; Kraijer & Kema 1994) is widely used in the Netherlands and Dutch-speaking regions of Belgium to assess functioning, especially competencies and skills, in persons with intellectual disability. This scale is a modified version of the Cain-Levine Social Competency Scale (Cain *et al*. 1963). It is divided into three scales on the basis of factor analysis in a sample of 1077 persons with intellectual disabilities. A total score can also be obtained. In the present analyses we used only the total score. Test–retest reliability, inter-rater reliability and internal consistency of the scales were found to be sufficiently high (Kraijer & Kema 1994; Kraijer 2000). In the present sample, internal consistency (Cronbach's alpha) of the total scale was 0.93.

Best Status Index

The *Best Status Index* (Best; Woods & Reed 1999) was originally developed for clients in forensic psychiatry to assess functioning in the areas of communication and social skills. The Best consists of five theoretically distinguished scales, viz. Risk, Insight, Communication and Social Skills, Self and Family Care, and Work and Recreational Activities. The different scales consist of 20 or 30 items, each rated on a five-point scale. Each rating point is described on a behavioural level. The Best can be completed by any member of a care team, provided he knows the client well and received instruction in the usage of the Best. Adequate test–retest reliability, inter-rater reliability and internal consistency of the scales have been found in different Dutch populations, among others and populations with intellectual disabilities (Woods & Reed 1998; Woods & Reed 1999; Woods *et al*. 2001; Ten Wolde 2004).

In this study three scales of the Best were used: Insight, which consists of 20 items examining the individual's cognitive constructs of reality (e.g. awareness of tension, compliance with therapy, prioritization of problems); Communication and Social Skills, which consists of 30 items and concerns adaptive social behaviours (e.g. ability to initiate conversation, listening skills, and sociability and support); Work and Recreational Activities, which consists of 20 items and relates to how a person functions during work and recreation (e.g. arrives on time for work, manages time, and initiatives regarding leisure activities). Because completion of all Best scales takes considerable time, we chose to administer only the scales that seemed most relevant for our population. In the present study internal consistency coefficients (Cronbach's alphas) for the three Best scales ranged from 0.92 to 0.94. With regard to the inter-rater reliability, correlations (Pearson's *r*) ranged from 0.70 to 0.74, and intra-class correlation coefficients (ICCs) ranged from 0.69 to 0.73, which is considered good according to Cicchetti's (1994) criteria.

Procedure

Data were gathered as part of a study concerning assessment of change in psychopathology and functioning in adults with mild intellectual disability or low IQ and severe challenging behaviour that started in January 2004. From this date, clients receiving inpatient treatment in the five participating treatment facilities were asked if standardized information collected during admission as part of the diagnostic and evaluation process in each facility could be used for research purposes. A majority of clients, viz. 80%, gave permission to use information. All instruments, with the exception of IQ test in some cases, were administered after admission. Informants were staff members of the institutes involved in the primary care and treatment of clients. All staff members received instructions and/or training in how to use instruments reported in this study.

For each client, a primary care staff member who had known the subject for at least 3 months completed the ABCL. In addition, to assess inter-rater reliability, the ABCL of the first 105 clients was completed by a second independent informant, also a ward staff member who had known the subject for at least 3 months. The same procedure was used concerning the administration of the Best. On average, the independent assessments of the ABCL and Best were within 5.8 days (SD = 9.4) of each other. The same ward staff members who rated the ABCL, rated in consultation with each other the SRZ-P, a procedure recommended in the manual of this instrument (Kraijer & Kema 1994). The DSM-IV checklist axis I was completed by the chair of the diagnostic team, who also rated the GAF.

Statistical analyses

To examine the reliability of the ABCL, Cronbach's alphas were calculated for the eight ABCL syndrome scales, and Internalizing, Externalizing, and Total Problem Score, using one completed ABCL of each client.

Following Cicchetti's (1994) criteria, when an alpha coefficient was below 0.70, it was considered low; between 0.70 and 0.79 as fair; between 0.80 and 0.89 as good; above 0.90 as excellent. To assess inter-rater reliability of the ABCL scales, ICCs were calculated for all independent informant pairs. ICCs below 0.40 were considered low; between 0.40 and 0.59 as fair; between 0.60 and 0.74 as good; above 0.75 as excellent (Cicchetti 1994).

To examine validity of the content of ABCL scales, association of ABCL scales with four different clusters, viz. any DSM-IV disorder, pervasive developmental disorder cluster, disruptive disorder cluster, and mood-anxiety disorder cluster, was examined using univariate analyses of variance (ANOVA). Each time, the main factor was group (two levels, i.e. cluster absent, and cluster present). Gender was entered as a factor, to adjust for group differences. Significance levels were adjusted for multiple comparisons using Bonferroni correction.

To examine convergent validity of the ABCL scales, Pearson's correlations were calculated between the ABCL syndrome scale scores, and measures of functioning. Besides, regression analyses were conducted with all measures of functioning, viz. GAF, SRZ-P, and three Best scales as dependent variable, and the eight small-band ABCL scales as independent variables. First, for each dependent variable, gender, treatment duration and age were tested. If age, treatment duration and/or gender significantly predicted ($P < 0.05$) the dependent variable, it was forced in the model before entering the syndrome scales.

Results

Reliability of the ABCL

The internal consistency coefficients and ICCs with 95% confidence intervals of the ABCL scales are given in Table 2. Cronbach's alphas of the ABCL scales in this sample ranged from 0.69 to 0.95 (mean alpha = 0.84). All scales, except Thought Problems, showed internal consistencies in the fair to excellent range. Inter-rater reliability, assessed by the ICC, ranged from 0.57 to 0.76 (mean ICC = 0.68). For eight scales ICCs were good, for two scales excellent (Aggressive Behavior and Externalizing Problems), and fair for one (Withdrawn).

Concurrent validity: correspondence ABCL scales and DSM-IV axis I

As is shown in Table 1, almost 58% of the clients were diagnosed with at least one axis I disorder. Most of them, 73.8%, had one diagnosis, 21.5% had two and 4.6% had three. Concurrent validity was assessed by comparing ABCL scale scores of clients with and without a diagnosis in different clusters. In Table 3 only mean values of ABCL scores that significantly differed between the subjects with and those without a disorder in each cluster are shown. Subjects with any axis I disorder obtained significantly higher scores than those without on Withdrawn and on Aggressive Behavior. Compared with subjects without a disruptive cluster disorder, subjects within this cluster obtained higher scores on Aggressive Behavior, Intrusive and Externalizing. Subjects with a pervasive developmental disorder cluster diagnosis obtained higher scores compared with subjects without a diagnosis in this cluster, on Withdrawn and Thought problems. Finally, subjects with a mood or anxiety disorder obtained higher scores than subjects without a mood or anxiety disorder on Anxious/Depressed and Internalizing.

Table 2 Reliability statistics of ABCL syndrome scale

	Reliabilities	
	Alpha (N = 124)	*ICC[1] (95% CI)[2] (N = 105)*
Anxious/depressed	0.89	0.62 (0.49–0.73)
Withdrawn	0.73	0.56 (0.42–0.68)
Somatic complaints	0.82	0.61 (0.47–0.71)
Thought problems	0.69	0.70 (0.59–0.79)
Attention problems	0.82	0.69 (0.57–0.77)
Aggressive behaviour	0.89	0.75 (0.65–0.82)
Rule-breaking behaviour	0.82	0.69 (0.57–0.77)
Intrusive	0.79	0.75 (0.66–0.83)
Internalizing problems	0.89	0.61 (0.48–0.71)
Externalizing problems	0.92	0.77 (0.69–0.84)
Total problems	0.95	0.69 (0.58–0.78)

[1]Interrater reliability; [2]95% CI = 95% confidence interval; all ICCs are significant at the $P < 0.001$ level.

Relationship between ABCL scales and measures of functioning

To examine the extent to which ABCL scale scores were related to functional impairment we examined the relationship of the syndrome scales with three measures of functional status, viz. GAF, SRZ-P and Best. First, we calculated Pearson's correlations between the ABCL syndrome scales and each functional measure (Table 4). Almost all syndrome scale scores correlated negatively with the measures of functioning. In addition, we

Table 3 ABCL scales differentiating between subjects with and those without a disorder in different DSM-IV clusters (N = 114)

	Absent (n = 48)	Present (n = 66)	F-value
Any axis I disorder			
Withdrawn	7.4 (3.6)	9.1 (3.7)	5.91*
Aggressive behaviour	9.9 (6.2)	14.3 (7.1)	8.89**
	Absent (n = 88)	Present (n = 26)	
Disruptive disorder			
Aggressive behaviour	11.5 (6.5)	15.7 (7.8)	6.93*
Intrusive	4.1 (2.8)	6.7 (3.5)	11.95**
Externalizing problems	24.7 (11.9)	35.2 (14.5)	10.57**
	Absent (n = 93)	Present (n = 21)	
Pervasive developmental disorders			
Withdrawn	8.2 (3.5)	10.1 (4.2)	6.16*
Thought problems	4.3 (3.3)	6.6 (3.4)	5.37*
	Absent (n = 93)	Present (n = 21)	
Anxiety-mood disorders			
Anxious/depressed	11.1 (6.0)	16.5 (6.6)	8.58**
Internalizing problems	22.5 (10.2)	30.6 (12.0)	6.73*

Only mean values for scales that differed for the two groups are shown.
*P < 0.05, **P < 0.01 (adjusted for multiple comparisons); ANOVA corrected for gender.

Table 4 Pearson correlation coefficients between ABCL syndrome scales and functional measures

			Best		
	GAF	*SRZ-P*	*Insight*	*Communication and social skills*	*Work and recreational activities*
Anxious/depressed	−0.28	−0.32	−0.18*	−0.34	−0.45
Withdrawn	−0.25*	−0.34	−0.49	−0.57	−0.55
Somatic complaints	−0.25*	−0.23*		−0.25	−0.30
Thought problems	−0.46	−0.35	−0.25	−0.42	−0.47
Attention problems	−0.28	−0.48	−0.40	−0.54	−0.66
Aggressive behaviour	−0.38	−0.35		−0.38	−0.55
Rule-breaking behaviour		−0.20*	−0.22*	−0.29	−0.34
Intrusive					−0.19*

Only statistically significant correlations are shown.
*P < 0.05; all other correlations are significant at the 0.01 level.

conducted linear regression analyses with each of these three functional measures as dependent variable and the raw syndrome scores as independent variables (see Table 5). First, we examined whether gender, age, and/or treatment duration predicted any of the dependent variables. The GAF score was the only dependent variable predicted by any of these variables, viz. treatment duration. Treatment duration explained 7% of the variance of the GAF score. In addition, Thought Problems and Aggressive Behavior contributed to the equation, resulting in a total of 25% explained variance. Higher levels of Thought Problems and Aggressive Behavior were associated with a lower GAF score. Attention Problems explained 31% of the variance in the SRZ-P score. The more the attention problems present, the worse was the functioning, as assessed by the SRZ-P. The ABCL Withdrawn scale was the main contributor to the explained variance of the Best-Insight, and Best-Communication and Social Skills scales. With the Best-Communication and Social Skills Scale, Attention Problems also

Table 5 Multiple regression analyses with the functional measures as dependent variables and ABCL syndrome scores, and eventually treatment duration, as predictor variable

Predictor	B	*SE* B	*β*	*Adjusted* R^2
Dependent variable: GAF score				
Treatment duration	−0.028	0.011	−0.218*	
Thought problems	−1.498	0.403	−0.350**	
Aggressive behaviour	−0.396	0.194	−0.193*	0.25
Dependent variable: SRZ-P				
Attention problems	−0.848	0.139	−0.482**	0.23
Dependent variable: Best–insight				
Withdrawn	−0.087	0.014	−0.485**	0.23
Dependent variable: Best–communication and social skills				
Withdrawn	−0.070	0.016	−0.380**	
Attention problems	−0.034	0.009	−0.323**	0.38
Dependent variable: Best–work and recreational activities				
Attention problems	−0.064	−0.010	−0.510**	
Aggressive behaviour	−0.031	−0.010	−0.258**	0.47

Only final models are shown.
*$P < 0.05$; **$P < 0.01$.

contributed to explained variance, resulting in 38% of the variance accounted for. Finally, variance in the Best-Work and Recreational Activities Scale was predicted by Attention Problems and Aggressive Behavior, resulting in 47% of the variance of this scale accounted for.

Discussion

In the present population of adults with mild intellectual disability or low IQ and severe challenging behaviour, admitted to specialized mental health services, reliability of the ABCL was satisfactory, as was shown by the fair to excellent internal consistency of most scales. Reliability was further confirmed by the good inter-rater reliability found for most ABCL scales. As has also been found in other studies, ward staff who know a client well can be a reliable source of information regarding psychopathology in this population (van Minnen *et al.* 1994, 1995; Sturmey & Bertman 1994; Balboni *et al.* 2000).

To examine the validity of the ABCL scales two different approaches were chosen. First, we examined the relationship of ABCL scales with different clusters of DSM-IV disorders. Most relationships between different clusters of DSM-IV axis I disorders and ABCL syndrome scales that could be expected were found. For example the ABCL Anxious/Depressed scale was significantly related to the mood-anxiety disorder cluster, and the Withdrawn scale was significantly related to the pervasive developmental disorder cluster, although the ABCL total problem score was not related to the presence of any DSM-IV axis I disorder. It should be noted that the present population consisted entirely of admitted clients. Differentiation within such a population through an overall severity score, like the total score of the ABCL, appears difficult. Furthermore, one should keep in mind that the ABCL, similar to the CBCL, is not specifically designed to assess DSM-IV disorders. In children, studies exploring the relationship between CBCL scales and diagnostic categories generally find modest associations between both methods (e.g. Jensen *et al.* 1996, 1993; Weinstein *et al.* 1990).

Besides the association between ABCL scales and clusters of DSM-IV disorders, we also examined the relationship between ABCL scales and different measures of functioning. Based on earlier research in both the general and intellectually disabled populations, we expected the presence of psychopathology to be negatively related, but not identical to, functioning (e.g. Matson & Bamburg 1998; Matson *et al.* 2000; Glynn 1998). Thus, finding associations between the ABCL and measures of functioning would mean further evidence for the validity of the ABCL as a measure of psychopathology in the present population. These associations were found with all measures of functioning, including the GAF. The ABCL and GAF were each rated by a different informant (i.e. staff member and chair of diagnostic team, respectively), in contrast to the SRZ-P and Best scales, which were completed by the same informant as the ABCL (i.e. staff member). The association between the ABCL and GAF seems an especially strong indicator of the validity of the ABCL.

An advantage of the ABCL is that it does not only contain a total score that indicates the severity of any

psychopathology present, but it also contains different syndrome scale scores. In the present study, it was found that various indices of psychopathology related to various indices of functioning in different ways, which implies that an overall psychopathology measure would be less informative. Besides, the assessment of different syndromes in the ABCL allows a more specific assessment of individual problems. Most individuals who are admitted to mental health institutions will have a relatively high overall severity score; however, individuals can differ considerably with regard to which domains are most problematic.

An implicit assumption in the current study is that the ABCL will retain the same structure and symptom specificity in the present population as it does in the general population for which it was originally developed. The meaningful associations found between clusters of DSM-IV disorders and relevant syndrome scales support the validity of this assumption. However, in future studies it will be important to address this question empirically through factor analysis. Because of the limited size of the present sample, factor analysis of the ABCL was not an option in this study.

The ABCL is not the first instrument developed for the general population to be applied to adults with intellectual disability. For example, Kellet *et al.* (2003, 2004) used the Brief Symptom Inventory (BSI; Derogatis 1993). The initial results seem promising. For example, the factor structure of the BSI found in the general population was replicated in adults with mild intellectual disability to a large extent (Kellet *et al.* 2004). Findings like these and the present one concerning the ABCL support the viewpoint of authors who suggested that it might be worthwhile to explore the application of general self-report (BSI) and proxy-report (ABCL) instruments in individuals with intellectual disability, prior to the development of new instruments, especially for this population (Kellet *et al.* 1999). The availability of these instruments and their reliability and validity when applied with people with low IQ may take the solution of diagnostic problems in this population a sizeable step forward.

There are some limitations of the present study that deserve comment. First, to standardize DSM-IV axis I classification, we made use of a checklist to integrate clinical information. Although reliability of this method was not checked in the present study, its validity has been documented in other studies (Hudziak *et al.* 1993; Bastiaansen *et al.* 2004). Classification of DSM-IV axis I disorders through other methods, such as a structured interview, would probably have been more appropriate. However, the DSM diagnostic information was obtained from sources other than the ABCL ratings, while showing systematic associations with the latter. In addition, the aim of the present study was to examine reliability and validity of the ABCL within one sample, consisting of clients admitted in institutes specialized in treatment of adults with mild intellectual disability and severe challenging behaviour. It remains to be shown whether results concerning the ABCL found in such a particular population can be generalized to other populations. More studies are needed. As already mentioned, it will be necessary to examine whether the same factor structure is found in adults with intellectual disability as in the general population. What also needs clarification is whether it is possible to use the ABCL to differentiate between clinical and non-clinical populations. This seems likely, as it was even possible to differentiate within a clinical population with the ABCL.

This study showed the first evidence of the reliability and validity of the ABCL as a psychopathology measure in clients with mild intellectual disability or low IQ and severe challenging behaviour. The ease of administration and the broad range of emotional and behavioural problems that can be assessed would make the ABCL a useful structured information-gathering tool for clinical practice and research. For example, the ABCL total score or scale scores could be used to differentiate manifestations of psychopathology or to measure effects of interventions in a standardized way. As the ABCL was developed for people with average intellectual ability, its use in populations with intellectual disability enables direct comparison with data obtained in the general population.

Acknowledgements

This study was supported by a grant from the De Borg Knowledge Centre, the Netherlands. The following five institutes cooperate with the De Borg Knowledge Centre: Trajectum – Hoeve Boschoord, Boschoord; Trajectum – Hanzeborg, Eefde; Altrecht GGz, afdeling Wier, Den Dolder; De Bruggen, Specialistische Zorg, Zwammerdam; De Wendel, Specialistische Zorg, Venray. We thank all personnel of the collaborating Institutes for their generous contribution in the data collection of this project. We thank Isabel Marrozos for textual comments on the manuscript.

Correspondence

Any correspondence should be directed to Dr Nienke H. Tenneij, Research and Documentation Centre

(WODC), Ministry of Justice, P.O. Box 20301, 2500 EH The Hague (e-mail: n.h.tenneij@minjus.nl).

References

Achenbach T.M. (1991) *Manual for the Child Behavior Checklist/4-18 and 1991 Profiles*. Department of Psychiatry, University of Vermont, Burlington, VT.

Achenbach T.M. (1997) *Manual for the Young Adult Self-Report and Young Adult Behavior Checklist*. Research Center for Children, Youth, & Families, University of Vermont,, Burlington, VT.

Achenbach T.M. & Rescorla L.A. (2003) *Manual for the ASEBA Adult Forms & Profiles*, University of Vermont, Research Center for Children, Youth, & Families, Burlington, VT.

Aman M.G., Singh N.N., Stewart A.W. & Field C.J. (1985a) The Aberrant Behavior Checklist: a behavior rating scale for the assessment of treatment effects. *American Journal of Mental Deficiencies* **89**, 485–491.

Aman M.G., Singh N.N., Stewart A.W. & Field C.J. (1985b) Psychometric characteristics of the aberrant behavior checklist. *American Journal of Mental Deficiencies* **89**, 492–502.

American Psychiatric Association (1994) *Diagnostic and Statistical Manual of Mental Disorders* 5th edn, American Psychiatric Association, Washington DC.

Balboni G., Battagliese G. & Pedrabissi L. (2000) The psychopathology inventory for mentally retarded adults: factor structure and comparisons between subjects with or without dual diagnosis. *Research in Developmental Disabilities* **21**, 311–321.

Bastiaansen D., Koot H.M., Ferdinand R.F. & Verhulst F.C. (2004) Quality of life in children with psychiatric disorders: self-, parent, and clinician report. *Journal of the American Academy of Child and Adolescent Psychiatry* **43**, 221–230.

Bielecki J. & Swender S.L. (2004) The assessment of social functioning in individuals with mental retardation: a review. *Behavior Modification* **28**, 694–708.

Borthwick-Duffy S.A. (1994) Epidemiology and prevalence of psychopathology in people with mental retardation. *Journal of Consulting and Clinical Psychology* **62**, 17–27.

Borthwick-Duffy S.A., Lane K.L. & Widaman K.F. (1997) Measuring problem behaviors in children with mental retardation: dimensions and predictors. *Research in Developmental Disabilities* **18**, 415–433.

Cain L. F., Levine S. & Elzey F. F. (1963) *Cain-Levine Social Competency Scale*. Consulting Psychologists Press, Palo Alto, CA.

Cicchetti D.V. (1994) Guidelines, criteria, and rules of thumb for evaluating normed and standardized assessment instruments in psychology. *Psychological Assessment* **6**, 284–290.

Dekker M.C., Koot H.M., van der Ende E.J. & Verhulst F.C. (2002) Emotional and behavioral problems in children and adolescents with and without intellectual disability. *Journal of Child Psychology and Psychiatry* **43**, 1087–1098.

Derogatis L.R. (1993) *Brief Symptom Inventory: Administration Scoring and Procedures Manual* 3rd edn. National Computer Systems, Minneapolis, MN.

Duncan D., Matson J.L., Bamburg J.W., Cherry K.E. & Buckley T. (1999) The relationship of self-injurious behavior and aggression to social skills in persons with severe and profound learning disability. *Research in Developmental Disabilities* **20**, 441–448.

Dykens E.M. (2000) Psychopathology in children with intellectual disability. *Journal of Child Psychology and Psychiatry* **41**, 407–417.

Glynn S. M. (1998) Psychopathology and social functioning in schizophrenia. In: *Handbook of Social Functioning in Schizophrenia* (eds K. T. Mueser & N. Tarrier)pp 66–78, Allyn and Bacon, Boston, MA.

Heal L. W. & Sigelman C. K. (1995) Response biases in interviews of individuals with limited mental ability. *Journal of Intellectual Disability Research* **39**, 331–340.

Hudziak J.J., Helzer J.E., Wetzel M.W., Kessel K.B., McGee B., Janca A. & Przybeck T. (1993) The use of the DSM-III-R Checklist for initial diagnostic assessments. *Comprehensive Psychiatry* **34**, 375–383.

Jensen P.S., Salzberg A.D., Richters J.E. & Watanabe H.K. (1993) Scales, diagnoses, and child psychopathology: I. CBCL and DISC relationships. *Journal of the American Academy of Child and Adolescent Psychiatry* **32**, 397–406.

Jensen P.S., Watanabe H.K., Richters J.E., Roper M., Hibbs E.D., Salzberg A.D. & Liu S. (1996) Scales, diagnosis, and child psychopathology: II. Comparing the CBCL and the DISC against external validators. *Journal of Abnormal Child Psychiatry* **24**, 151–168.

Kellet S.C., Beail N., Newman D.W. & Mosley E. (1999) Indexing psychological distress in people with an intellectual disability: use of the Symptom Checklist-90-R. *Journal of Applied Research in Intellectual Disabilities* **12**, 323–334.

Kellet S., Beail N., Newman D.W. & Frankish P. (2003) Utility of the Brief Symptom Inventory in the assessment of psychological distress. *Journal of Applied Research in Intellectual Disabilities* **16**, 127–134.

Kellet S., Beail N., Newman D.W. & Hawes A. (2004) The factor structure of the Brief Symptom Inventory: intellectual disability evidence. *Clinical Psychology and Psychotherapy* **11**, 275–281.

Koskentausta T., Iivanainen M. & Almqvist F. (2004) CBCL in the assessment of psychopathology in Finnish children with intellectual disability. *Research in Developmental Disabilities* **25**, 341–354.

Kraijer D. (2000) Review of adaptive behavior studies in mentally retarded persons with autism/pervasive developmental disorder. *Journal of Autism and Developmental Disorders* **30**, 39–47.

Kraijer D.W. & Kema G.N. (1994) *Sociale redzaamheidsschaal voor zwakzinnigen van hoger niveau, handleiding*. Swets & Zeitlinger b.v, Lisse.

Linna S.L., Moilanen I., Ebeling H., Piha J., Kumpulainen K., Tamminen T. & Almqvist F. (1999) Psychiatric symptoms in children with intellectual disability. *European Child and Adolescent Psychiatry* **8**(Suppl 4), 77–82.

Matson J.L. & Bamburg J.W. (1998) Reliability of the assessment of dual diagnosis (ADD). *Research in Developmental Disabilities* **19**, 89–95.

Matson J.L., Kazdin A.E. & Senatore V. (1984) Psychometric properties of the psychopathology instrument for mentally retarded adults. *Applied Research in Mental Retardation* **5**, 81–89.

Matson J.L., Anderson S.J. & Bamburg J.W. (2000) The relationship of social skills to psychopathology for individuals with mild and moderate mental retardation. *The British Journal of Developmental Disabilities* **46**, 15–22.

van Minnen A., Savelsberg P.M. & Hoogduin K.A. (1994) A Dutch version of the Psychopathology Inventory for Mentally Retarded Adults (PIMRA). *Research in Developmental Disabilities* **15**, 269–278.

van Minnen A., Savelsberg P.M. & Hoogduin K.A. (1995) A Dutch version of the Reiss Screen of Maladaptive Behavior. *Research in Developmental Disabilities* **16**, 43–49.

Mohr C., Tonge B.J. & Einfeld S.L. (2005) The development of a new measure for the assessment of psychopathology in adults with intellectual disability. *Journal of Intellectual Disability Research* **49**, 469–480.

Reiss S. (1988) *Reiss Screen for Maladaptive Behavior Test Manual*. IDS Publishing Corporation, Worthington.

Rojahn J., Matson J.L., Lott D., Esbensen A.J. & Smalls Y. (2001) The Behavior Problems Inventory: an instrument for the assessment of self-injury, stereotyped behavior, and aggression/destruction in individuals with developmental disabilities. *Journal of Autism and Developmental Disorders* **31**, 577–588.

Sanderson K. & Andrews G. (2002) Prevalence and severity of mental health-related disability and relationship to diagnosis. *Psychiatric Service* **53**, 80–86.

Senatore V., Matson J.L. & Kazdin A.E. (1985) An Inventory to assess psychopathology of mentally retarded adults. *American Journal of Mental Deficiencies* **89**, 459–466.

Sturmey P. & Bertman L.J. (1994) Validity of the Reiss Screen for Maladaptive Behavior. *American Journal of Mental Retardation* **99**, 201–206.

Ten Wolde A.C. (2004) *Eindrapport: Omgang als Opgave*. Behandelcentrum Hoeve Boschoord, Hoeve Boschoord.

Weinstein S.R., Noam G.G., Grimes K., Stone K. & Schwab-Stone M. (1990) Convergence of DSM-III diagnoses and self-reported symptoms in child and adolescent inpatients. *Journal of the American Academy of Child and Adolescent Psychiatry* **29**, 627–634.

Woods P. & Reed V. (1998) Measuring risk and related behaviours with the Behavioural Status Index (BSI): some preliminary psychometric studies. *International Journal of Psychiatric Nursing Research* **4**, 396–409.

Woods P. & Reed V. (1999) The Behavioural Status (BSI): some preliminary reliability studies. *International Journal of Psychiatric Nursing Research* **5**, 554–561.

Woods P., Reed V. & Collins M. (2001) Measuring communication and social skill in a high security forensic setting using the Behavioural Status Index. *International Journal of Psychiatric Nursing Research* **7**, 761–777.